

# Mineral Industry Surveys

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## ZINC IN FEBRUARY 2004

Domestic mine production in February, at 55,000 metric tons (t), was about 9% lower than in January and 12% lower than production in February 2003, according to the U.S. Geological Survey. Smelter production, at 26,900 t, was the same as in January but was about 18% more than a year before. Apparent consumption, at 99,800 t, was slightly lower than in January and about 12% lower than in February 2003.

The Platts Metals Week composite price for North American Special High Grade zinc increased to 53.84 cents per pound; compared with February 2003, it increased by about 39%.

Ontzinc Corp. has signed a \$10 million debt financing deal that will allow Ontzinc to restart operations at its recently purchased Balmat Mine in upstate New York. The mine, formerly operated by Zinc Corporation of America, was closed in May 2001 owing to low zinc prices. The agreement with RMB Resources, part of South Africa's First Rand Group, is subject to due diligence and final approval from the directors of Ontzinc. The company anticipates reopening early in the second half of the year and reaching a production rate of 55,000 metric tons per year (t/yr) by the third year of production. Inferred reserves amount to 2 million metric tons (Mt) grading 11.9% zinc, enough for a 10-year mine life. Ontzinc plans to focus on mining only the higher grade ore in order to reduce operating cost to between \$0.30 and \$0.35 per pound of zinc (Ontzinc Corp., 2003<sup>1</sup>).

A strike at Big River Zinc's Sauget, IL, refinery was avoided when a majority of the 220 unionized workers agreed to extend by 1 year the existing labor agreement, due to expire in May. Big River Zinc (a subsidiary of Korea Zinc Co. Ltd.) produces about 90,000 t/yr of zinc as refined zinc metal, zinc alloys, zinc powders, zinc sulfate, and zinc oxide. The company also produces electrolytic or commercial grade sulfuric acid and high purity cadmium oxide (Metal-Pages, 2004<sup>§</sup>).

Zinifex Ltd. of Australia, the new company being formed from key Pasminco Ltd. assets, is expected to earn 57% of its sales revenue from zinc metal and is looking to increase output of value-added zinc products. Zinifex's main zinc assets are

two mines and three smelters, most of them in Australia. The Century open pit zinc-lead mine in northwest Queensland, the world's second largest zinc mine after Teck Cominco Ltd.'s Red Dog Mine, produced 520,000 t of contained zinc in FY 2003. During the same fiscal year, the Rosebery Mine in western Tasmania produced 81,000 t of zinc in concentrate. Zinifex's three smelters (Hobart, in Tasmania; Budel, in the Netherlands; and Clarksville, in the United States) have a combined capacity of 540,000 t/yr. In addition, Zinifex is a 50% owner of a lead and zinc secondary smelter in Port Pirie, South Australia (Platts Metals Week, 2004b). Zinifex was scheduled to be listed on the Australian Stock Exchange on April 5. The company hopes to sell 500 million shares and raise between \$810 and \$1,040 million (Metal Bulletin, 2004).

The Doe Run Company, St. Louis, MO, is to close part of the zinc smelting capacity at its Oroya complex in Peru in 2005 in order to reduce sulfur dioxide emissions, which Doe Run agreed to when it purchased the complex from the Peruvian Government in 1998. The closure of the oldest section of the zinc operation will reduce production by 40% to 45,000 t/yr. Closure could be avoided if the Peruvian Government agrees to extend the deadline until the end of 2011. If the Government approves the extension, Doe Run is willing to spend \$150 million on environmental improvements that would reduce "fugitive" emissions, which are eight times higher than those from the chimneys (Mining Journal, 2004).

The Porto Vesme complex in Sardinia is expected to start production within the next 2 months. Although it has been closed since October 2003, owing to high electricity costs, zinc and lead concentrate was being delivered to the Glencore International AG-owned smelter. The complex consists of an Imperial smelting furnace (85,000 t/yr), an electrolytic zinc smelter with a capacity of 103,000 t/yr, and a 100,000-t/yr-lead smelter (Platts Metals Week, 2004a).

Union Capital Ltd. commenced studies into the feasibility of a staged development of its Mehdiabad zinc, silver, and lead deposit in central Iran. The deposit is the largest zinc oxide deposit in the world, containing about one-fourth of the world's known zinc oxide resources. The first stage of development of the deposit, which is amenable to processing by acid leaching,

<sup>1</sup>References that include a section mark (§) are found in the Internet References section.

should be on line by 2006. It will include a trial mine, pilot plant, and the development of a demonstration plant producing about 30,000 t/yr of zinc metal. A positive cash flow from this project is expected to finance the next three stages of development. When fully developed, Mehdiabad could produce up to 500,000 t/yr of zinc for 30 years, making it one of the largest mines in the world. Current activity is focusing on the metallurgical test work, and the plant flow sheet will be finalized by the middle of this year. The most critical aspect of the flow sheet is the purification circuit, where all the impurities leached into solution with the zinc have to be removed prior to electrowinning. The deposit, jointly owned by Union Capital, an Iranian Government Company (IMPASCO), and Itok GmbH, contains 218 Mt of resources grading 7.2% zinc, 2.3% lead, and 51 grams per metric ton (g/t) silver (Union Capital Limited, 2004§).

Pan American Silver Ltd. of Canada has agreed to buy the Morococha mining complex in Peru from Sociedad Minera Corona S.A. Subject to regulatory approval, the agreement entitles Pan American to own 92% equity in a new company, which in turn would purchase the Morococha assets, namely the Anticona and Manuelita Mines. Morococha has proven and

probable reserves totaling 1.06 Mt grading 4.94% zinc and 269 g/t silver (CRU International Ltd., 2004).

## References Cited

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 Ontzinc Corp., 2003 (September 24), An emerging global producer, accessed March 26, 2004, at URL <http://www.ontzinc.ca>.  
 Union Capital Limited, 2004 (March 17), Progress of Mehdiabad zinc project, accessed April 1, 2004, at URL <http://www.unioncapital.com.au>.

TABLE 1  
SALIENT ZINC STATISTICS<sup>1</sup>

(Metric tons, unless otherwise specified)

|   | 2003                 |          | 2004                    |            |                      |
|---|----------------------|----------|-------------------------|------------|----------------------|
|   | January-<br>December | December | January                 | February   | January-<br>February |
| <b>Production:</b>  |                      |          |                         |            |                      |
| Mine, zinc content of concentrate   | 768,000              | 62,900   | 60,400                  | 55,000     | 115,000              |
| Mine, recoverable zinc  | 738,000              | 60,500   | 58,100                  | 52,900     | 111,000              |
| Smelter, refined zinc   | 272,000              | 20,200   | 26,900                  | 26,900     | 53,800               |
| <b>Consumption:</b>   |                      |          |                         |            |                      |
| Refined zinc, reported  | 423,000              | 36,400   | 35,100 <sup>r</sup>     | 36,200     | 71,200               |
| Ores <sup>e</sup> (zinc content)  | 727                  | 61       | 61                      | 61         | 121                  |
| Zinc-base scrap <sup>e</sup> (zinc content)                                       | 191,000              | 15,900   | 15,900                  | 15,900     | 31,800               |
| Copper-base scrap <sup>e</sup> (zinc content)                                     | 176,000              | 14,700   | 14,700                  | 14,700     | 29,300               |
| Aluminum-and magnesium-base scrap <sup>e</sup><br>(zinc content)                  | 1,430                | 120      | 120                     | 120        | 239                  |
| Total <sup>e</sup>  | 791,000              | 67,200   | 65,800 <sup>r</sup>     | 66,900     | 133,000              |
| Apparent consumption, metal <sup>2</sup>  | 1,050,000            | 98,100   | 98,900                  | 99,800     | 199,000 <sup>3</sup> |
| Stocks of refined (slab) zinc, end of period:                                     |                      |          |                         |            |                      |
| Producer <sup>4</sup>   | XX                   | 7,660    | 6,440                   | 4,540      | XX                   |
| Consumer <sup>5</sup>   | XX                   | 55,300   | 55,500                  | 55,000     | XX                   |
| Merchant  | XX                   | 10,300   | 9,920                   | 9,460      | XX                   |
| Total   | XX                   | 73,300   | 71,800                  | 69,000     | XX                   |
| Shipments of zinc metal from Government stockpile                                 | 13,600               | 6,270    | 3,340                   | --         | 3,340                |
| <b>Imports for consumption:</b>   |                      |          |                         |            |                      |
| Refined (slab) zinc   | 758,000              | 67,500   | 70,300                  | NA         | 70,300               |
| Oxide (gross weight)  | 98,300               | 8,880    | 8,160                   | NA         | 8,160                |
| Ore and concentrate (zinc content)  | 164,000              | 27,100   | 39,600                  | NA         | 39,600               |
| <b>Exports:</b>   |                      |          |                         |            |                      |
| Refined (slab) zinc   | 1,680                | 205      | 160                     | NA         | 160                  |
| Oxide (gross weight)  | 12,100               | 1,160    | 907                     | NA         | 907                  |
| Ore and concentrate (zinc content)  | 841,000              | 35,100   | 860                     | NA         | 860                  |
| Waste and scrap (gross weight)  | 50,200               | 3,810    | 4,770                   | NA         | 4,770                |
| <b>Price:</b>   |                      |          |                         |            |                      |
| London Metal Exchange, average,<br>dollars per metric ton                         | \$827.32             | \$977.35 | \$1,016.62 <sup>r</sup> | \$1,087.26 | \$1,051.94           |
| Platts Metals Week North American<br>Special High Grade, average, cents per pound | 40.63                | 47.85    | 49.93                   | 53.84      | 51.88                |

<sup>e</sup>Estimated. <sup>r</sup>Revised. NA Not available. XX Not applicable. -- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits; except prices; may not add to totals shown.

<sup>2</sup>Smelter production plus imports minus exports plus shipments from Government stockpile plus stock change.

<sup>3</sup>Data based on reported consumption, stocks, and estimated trade data.

<sup>4</sup>Data from U.S. Geological Survey and American Bureau of Metal Statistics.

<sup>5</sup>Includes an estimate for companies that report annually.

TABLE 2  
REFINED ZINC PRODUCED IN THE UNITED STATES<sup>1</sup>

(Metric tons)

| Month            | Beginning<br>stocks <sup>2</sup> | Production | Shipments | Ending<br>stocks <sup>2</sup> |
|------------------|----------------------------------|------------|-----------|-------------------------------|
| 2003:            |                                  |            |           |                               |
| February         | 11,900                           | 22,800     | 25,800    | 8,930                         |
| March            | 8,930                            | 21,700     | 24,500    | 6,110                         |
| April            | 6,110                            | 23,000     | 20,700    | 8,340                         |
| May              | 8,340                            | 22,400     | 23,500    | 7,300                         |
| June             | 7,300                            | 24,200     | 23,700    | 7,770                         |
| July             | 7,770                            | 22,100     | 21,500    | 8,360                         |
| August           | 8,360                            | 23,500     | 23,600    | 8,230                         |
| September        | 8,230                            | 21,600     | 22,100    | 7,790                         |
| October          | 7,790                            | 21,800     | 21,300    | 8,300                         |
| November         | 8,300                            | 23,500     | 23,800    | 8,010                         |
| December         | 8,010                            | 20,200     | 20,500    | 7,660                         |
| Year             | XX                               | 272,000    | 273,000   | XX                            |
| 2004:            |                                  |            |           |                               |
| January          | 7,660                            | 26,900     | 28,100    | 6,440                         |
| February         | 6,440                            | 26,900     | 28,100    | 4,540                         |
| January-February | XX                               | 53,800     | 56,200    | XX                            |

XX Not applicable.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Includes stocks held at locations other than smelters.

Sources: U.S. Geological Survey and American Bureau of Metal Statistics.

TABLE 3  
APPARENT CONSUMPTION OF REFINED ZINC ACCORDING TO INDUSTRY USE AND PRODUCT<sup>1</sup>

(Metric tons)

| Industry and product    | 2003                 |          | 2004                |                       |                      |
|-------------------------|----------------------|----------|---------------------|-----------------------|----------------------|
|                         | January-<br>December | December | January             | February <sup>2</sup> | January-<br>February |
| Galvanizing:            |                      |          |                     |                       |                      |
| Sheet and strip         | 442,000              | 41,100   | 40,900 <sup>r</sup> | 40,400                | 81,300               |
| Other                   | 146,000              | 14,100   | 14,400 <sup>r</sup> | 14,500                | 28,900               |
| Total                   | 588,000              | 55,300   | 55,300 <sup>r</sup> | 54,900                | 110,000              |
| Brass and bronze        | 167,000              | 15,400   | 15,600 <sup>r</sup> | 16,900                | 32,600               |
| Zinc-base alloy         | 222,000              | 20,300   | 20,700 <sup>r</sup> | 20,700                | 41,400               |
| Other uses <sup>3</sup> | 70,700               | 7,100    | 7,300               | 7,300                 | 14,500               |
| Grand total             | 1,050,000            | 98,100   | 98,900              | 99,800                | 199,000              |

<sup>r</sup>Revised.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Data based on reported consumption, stocks and estimated trade data.

<sup>3</sup>Includes zinc used in making zinc dust, desilvering lead, powder, alloys, anodes, chemicals, castings, light metal alloys, rolled zinc, and miscellaneous uses not elsewhere specified.

TABLE 4  
AVERAGE MONTHLY ZINC PRICES<sup>1</sup>

| Period           | North American | LME cash |          |
|------------------|----------------|----------|----------|
|                  | ¢/lb.          | ¢/lb.    | \$/t     |
| 2003:            |                |          |          |
| February         | 38.68          | 35.60    | 784.80   |
| March            | 38.88          | 35.86    | 790.60   |
| April            | 37.23          | 34.21    | 754.30   |
| May              | 38.18          | 35.17    | 775.33   |
| June             | 38.87          | 35.85    | 790.31   |
| July             | 40.54          | 37.52    | 827.19   |
| August           | 40.10          | 37.08    | 817.48   |
| September        | 40.07          | 37.10    | 817.81   |
| October          | 43.70          | 40.71    | 897.54   |
| November         | 44.80          | 41.47    | 914.16   |
| December         | 47.85          | 44.33    | 977.35   |
| Year             | 40.63          | 37.53    | 827.32   |
| 2004:            |                |          |          |
| January          | 49.93          | 46.11    | 1,016.62 |
| February         | 53.84          | 49.32    | 1,087.26 |
| January-February | 51.88          | 47.72    | 1,051.94 |

<sup>1</sup>Special High Grade.

Source: Platts Metals Week.

TABLE 5  
U.S. EXPORTS OF ZINC<sup>1</sup>

| Material                             | 2003                   |                   | January 2004 <sup>2</sup> |                   |
|--------------------------------------|------------------------|-------------------|---------------------------|-------------------|
|                                      | Quantity (metric tons) | Value (thousands) | Quantity (metric tons)    | Value (thousands) |
| Refined (slab) zinc                  | 1,680                  | \$1,760           | 160                       | \$183             |
| Ore and concentrate (zinc content)   | 841,000                | 337,000           | 860                       | 791               |
| Waste and scrap (gross weight)       | 50,200                 | 32,600            | 4,770                     | 3,950             |
| Powders, flakes, dust (zinc content) | 6,550                  | 9,090             | 573                       | 988               |
| Oxide (gross weight)                 | 12,100                 | 15,200            | 907                       | 1,240             |
| Chloride (gross weight)              | 1,470                  | 1,650             | 99                        | 151               |
| Sulfate (gross weight)               | 2,310                  | 1,440             | 319                       | 168               |
| Compounds, other (gross weight)      | 183                    | 472               | 12                        | 40                |

<sup>1</sup>Data are rounded to no more than three significant digits.

<sup>2</sup>Data for February 2004 were not available at time of publication.

Source: U.S. Census Bureau.

TABLE 6  
U.S. IMPORTS FOR CONSUMPTION OF ZINC<sup>1</sup>

| Material                             | 2003                   |                   | January 2004 <sup>2</sup> |                   |
|--------------------------------------|------------------------|-------------------|---------------------------|-------------------|
|                                      | Quantity (metric tons) | Value (thousands) | Quantity (metric tons)    | Value (thousands) |
| Refined (slab) zinc                  | 758,000                | \$647,000         | 70,300                    | \$69,900          |
| Ore and concentrate (zinc content)   | 164,000                | 60,000            | 39,600                    | 11,600            |
| Waste and scrap (gross weight)       | 10,300                 | 5,740             | 756                       | 469               |
| Powders, flakes, dust (zinc content) | 27,400                 | 41,200            | 1,870                     | 2,940             |
| Oxide (gross weight)                 | 98,300                 | 72,200            | 8,160                     | 6,440             |
| Chloride (gross weight)              | 663                    | 914               | 1                         | 10                |
| Sulfate (gross weight)               | 25,800                 | 11,700            | 2,870                     | 1,150             |
| Compounds, other (gross weight)      | 1,010                  | 951               | 92                        | 133               |

<sup>1</sup>Data are rounded to no more than three significant digits.

<sup>2</sup>Data for February 2004 were not available at time of publication.

Source: U.S. Census Bureau.

TABLE 7  
SHIPMENTS OF ZINC METAL FROM THE NATIONAL DEFENSE  
STOCKPILE<sup>1</sup>

(Metric tons)

| Period           | Beginning<br>inventory | Shipments | Ending<br>inventory |
|------------------|------------------------|-----------|---------------------|
| 2003:            |                        |           |                     |
| February         | 108,000                | --        | 108,000             |
| March            | 108,000                | --        | 108,000             |
| April            | 108,000                | 200       | 108,000             |
| May              | 108,000                | 997       | 107,000             |
| June             | 107,000                | --        | 107,000             |
| July             | 107,000                | 3,530     | 104,000             |
| August           | 104,000                | 712       | 103,000             |
| September        | 103,000                | 841       | 102,000             |
| October          | 102,000                | --        | 102,000             |
| November         | 102,000                | 539       | 102,000             |
| December         | 102,000                | 6,270     | 95,200              |
| Year             | XX                     | 13,600    | XX                  |
| 2004:            |                        |           |                     |
| January          | 95,200                 | 3,340     | 91,900              |
| February         | 91,900                 | --        | 91,900              |
| January-February | XX                     | 3,340     | XX                  |

XX Not applicable. -- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

Source: Defense Logistics Agency.

TABLE 8  
U.S. IMPORTS OF ZINC, BY TYPE OF MATERIAL AND COUNTRY<sup>1,2</sup>

(Metric tons)

| Material and country                 | General imports |                 | Imports for consumption |                 |
|--------------------------------------|-----------------|-----------------|-------------------------|-----------------|
|                                      | 2003            | 2004<br>January | 2003                    | 2004<br>January |
| Ore and concentrate (zinc content):  |                 |                 |                         |                 |
| Australia                            | 43,400          | --              | 43,400                  | --              |
| Ireland                              | 36,500          | --              | 36,500                  | --              |
| Mexico                               | 9,400           | --              | 9,400                   | --              |
| Peru                                 | 74,600          | 39,600          | 74,600                  | 39,600          |
| Total                                | 164,000         | 39,600          | 164,000                 | 39,600          |
| Blocks, pigs, or slab:               |                 |                 |                         |                 |
| Australia                            | 22,000          | --              | 14,400                  | 6,270           |
| Brazil                               | 27,600          | 2,920           | 22,400                  | 2,920           |
| Canada                               | 498,000         | 40,900          | 498,000                 | 40,900          |
| China                                | 23,800          | --              | 48                      | --              |
| Japan                                | 50              | --              | --                      | --              |
| Kazakhstan                           | 19,700          | 2,310           | 19,700                  | 2,310           |
| Korea, Republic of                   | 34,000          | --              | 1,340                   | 3,640           |
| Mexico                               | 141,000         | 13,100          | 141,000                 | 13,100          |
| Peru                                 | 43,400          | 1,120           | 42,900                  | 1,120           |
| Poland                               | 1,600           | --              | 1,600                   | --              |
| Other                                | 17,100          | 1               | 16,200                  | 1               |
| Total                                | 829,000         | 60,400          | 758,000                 | 70,300          |
| Dross, ashes, fume (zinc content)    | 14,100          | 1,180           | 14,100                  | 1,180           |
| Grand total                          | 1,010,000       | 101,000         | 936,000                 | 111,000         |
| Oxide (gross weight):                |                 |                 |                         |                 |
| Canada                               | 47,300          | 3,620           | 47,300                  | 3,620           |
| China                                | 575             | 80              | 575                     | 80              |
| Japan                                | 965             | 106             | 965                     | 106             |
| Mexico                               | 40,500          | 3,550           | 40,500                  | 3,550           |
| Netherlands                          | 4,820           | 272             | 4,820                   | 272             |
| Other                                | 4,190           | 535             | 4,190                   | 535             |
| Total                                | 98,300          | 8,160           | 98,300                  | 8,160           |
| Other (gross weight):                |                 |                 |                         |                 |
| Waste and scrap                      | 10,300          | 756             | 10,300                  | 756             |
| Sheets                               | 1,790           | 74              | 1,790                   | 74              |
| Powders, flakes, dust (zinc content) | 27,500          | 1,870           | 27,400                  | 1,870           |

-- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Data for February 2004 were not available at time of publication.

Source: U.S. Census Bureau.